Skills Practice

Name ______________________________ **Date** ______________

I. Solving Systems of Equations

A. Solve each system of linear equations using substitution.

1. $\begin{cases} y = 2x + 2 \\ y = -7x - 1 \end{cases}$

2. $\begin{cases} y = 5x - 8 \\ y = x - 20 \end{cases}$

3. $\begin{cases} x + y = 12 \\ y = -15 + 8x \end{cases}$

4. $\begin{cases} y = -3.5x - 2.4 \\ y = -5.2 + 1 \end{cases}$

5. $\begin{cases} \frac{1}{2}x - y = 10 \\ y = \frac{3}{2}x - 8 \end{cases}$

6. $\begin{cases} x = 4y - 9 \\ 2x - 8y = 10 \end{cases}$

B. Solve the system of equations using linear combinations.

1. $\begin{cases} x - 5y = 8 \\ 4x + 5y = 7 \end{cases}$

2. $\begin{cases} -2.0x + 0.3y = 5.5 \\ 2.0x - 0.8y = -7.5 \end{cases}$

3. $\begin{cases} y = -7x - 3 \\ y = 4x + 8 \end{cases}$

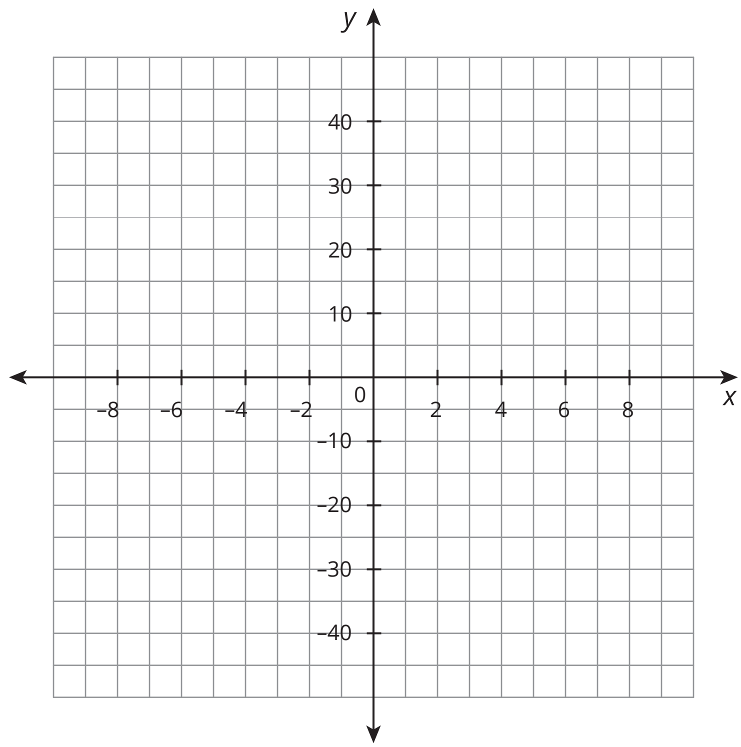
4. $\begin{cases} 3y = -2x + 4 \\ 4x + 6y = 8 \end{cases}$

5. $\begin{cases} \frac{1}{2}x - \frac{3}{4}y = \frac{5}{8} \\ -2x + \frac{1}{2}y = -\frac{3}{2} \end{cases}$

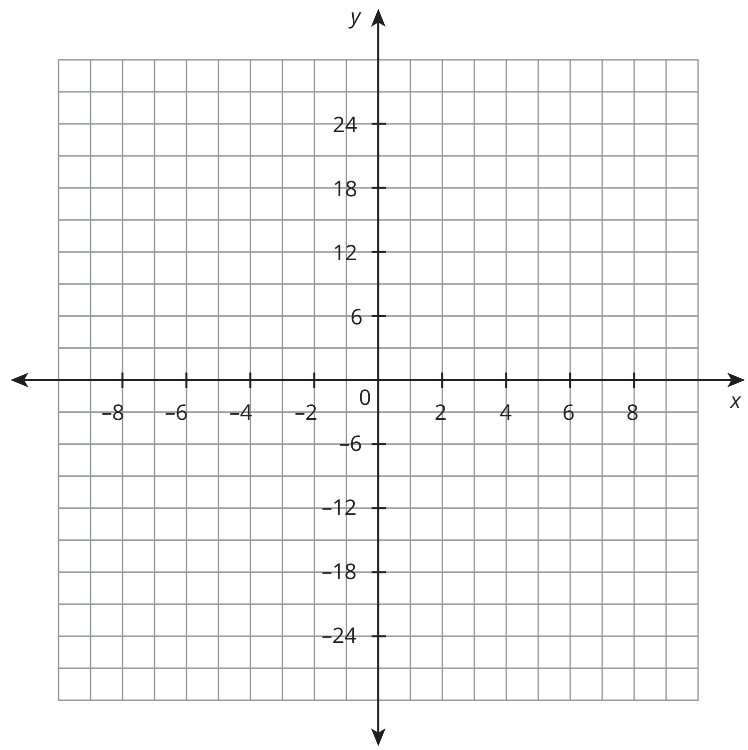
6. $\begin{cases} -4y = 12x + 10 \\ -y = 3x + 8 \end{cases}$

C. Solve each system of two equations in two variables algebraically. Then verify the solution graphically.

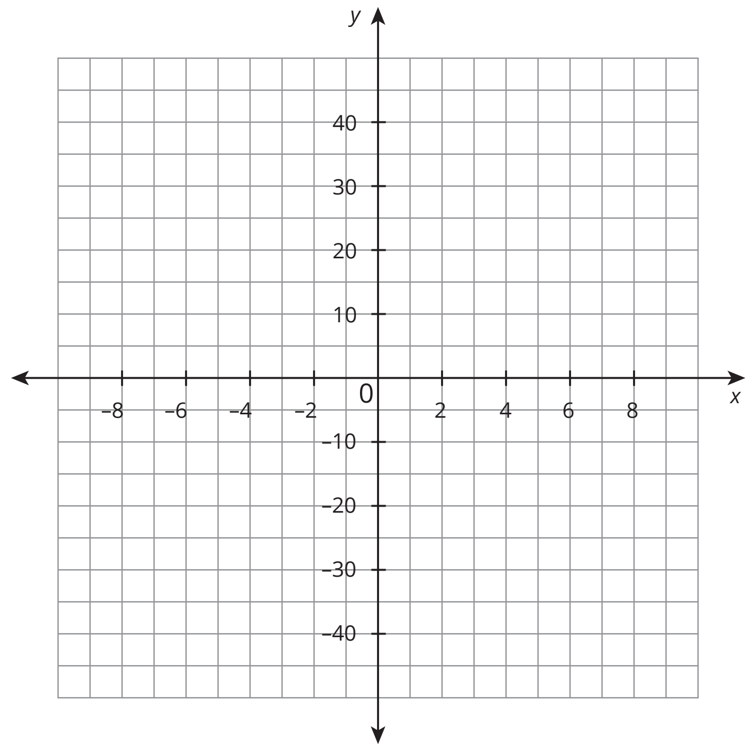
1. $\begin{cases} y = x^2 + 2x + 5 \\ y = 5x + 15 \end{cases}$



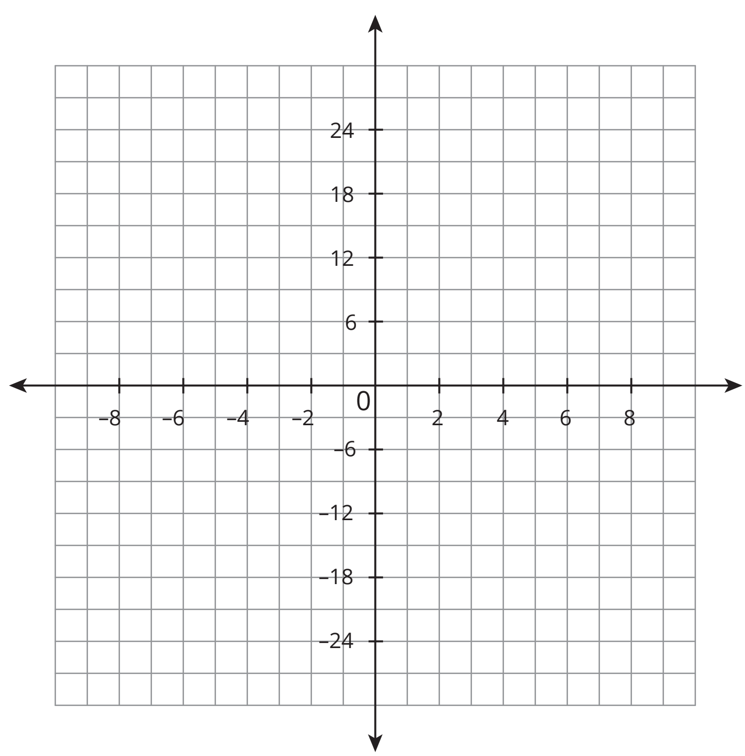
2. $\begin{cases} y = -x^2 + 7x - 16 \\ y = 4x - 20 \end{cases}$



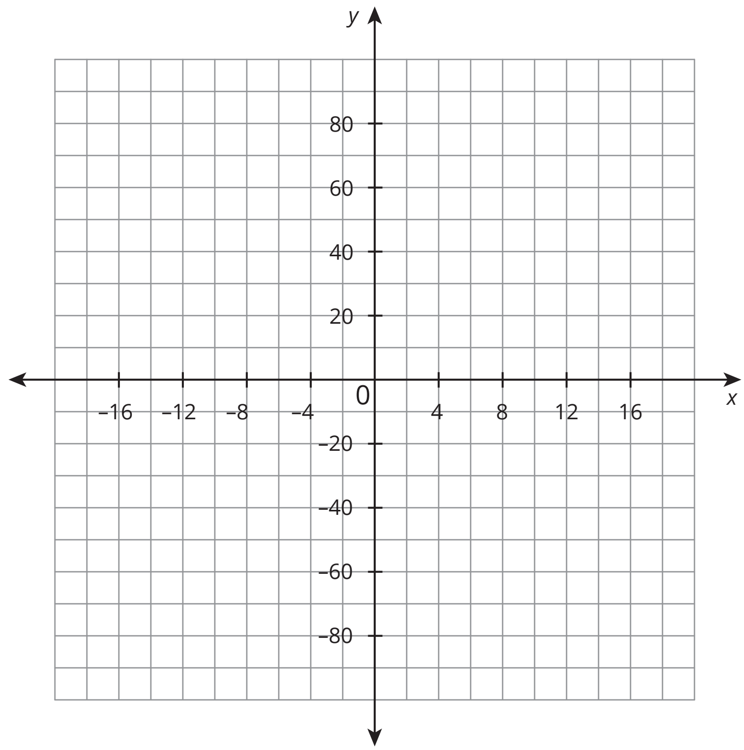
3. $\begin{cases} y = x^2 + 8x + 4 \\ y = x - 9 \end{cases}$



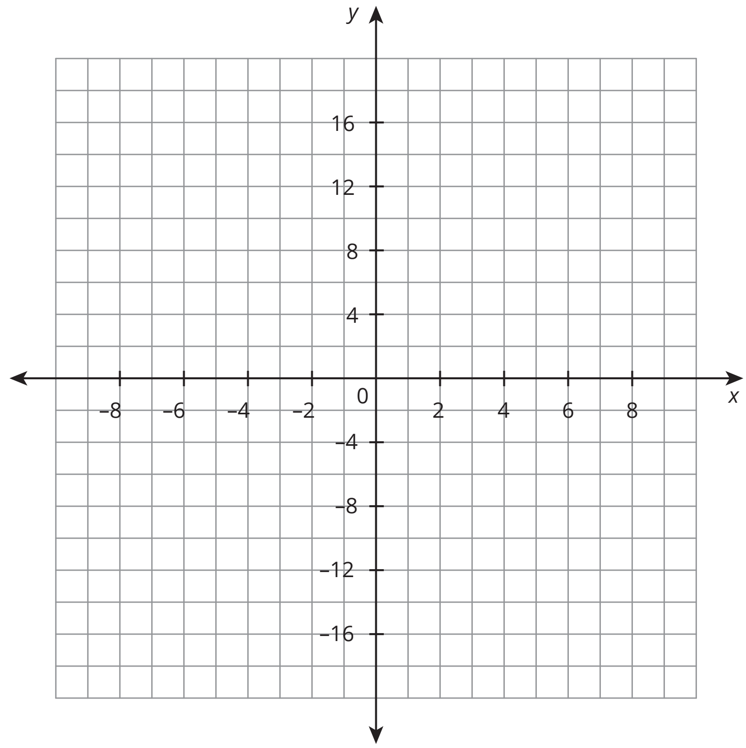
4. $\begin{cases} y = -2x^2 + 8x + 1 \\ y = -4x + 19 \end{cases}$



5. $\begin{cases} 5x - 3 = y \\ x^2 - 2y = 30 \end{cases}$



6. $\begin{cases} y = x^2 + 10 + 11 \\ y = x - 7 \end{cases}$



D. Solve the system of three linear equations in three variables using Gaussian elimination.

1. $\begin{cases} 2x - 4y + 5z = -33 \\ 4x - y = -5 \\ -2x + 2y - 3z = 19 \end{cases}$

2. $\begin{cases} 3x + 2y + z = 1 \\ x + y + z = 0 \\ 5x + 3y - 2z = -4 \end{cases}$

3. $\begin{cases} a - 2b - 3c = 1 \\ 2a - 3b + 3c = 10 \\ 4a - b + c = 10 \end{cases}$

4. $\begin{cases} x - 2y + 3z = 7 \\ 2x + y + z = 4 \\ -3x + 2y - 2z = -10 \end{cases}$

5. $\begin{cases} p - 3q + r = 4 \\ 3p + 2q + r = 3 \\ -6p - 4q - 2r = 1 \end{cases}$

6. $\begin{cases} -3x + 2y - 5z = -14 \\ 2x - 3y + 4z = 10 \\ x + y + z = 4 \end{cases}$

E. Write and solve the system of linear equations.

1. Jason is helping raise money for a dog rescue foundation by selling baskets of dog treats.

- Basket A contains 4 peanut butter treats, 3 bacon treats, and 2 cheese treats and sells for $12.31.
- Basket B contains 3 peanut butter treats, 4 bacon treats, and 3 cheese treats and sells for $11.91.
- Basket C contains 6 peanut butter treats, 5 bacon treats, and 4 cheese treats and sells for $20.25.

What is the cost for one of each kind of treat?

2. A local theatre is selling tickets for their upcoming production. They offer 3 different ticket prices for children, adults, and seniors. One receipt shows a customer bought 2 child tickets, 2 adult tickets, and 1 senior ticket for $132. Another receipt shows a customer bought 3 child tickets, 4 adult tickets, and 2 senior tickets for $201. A third receipt shows a customer bought 2 child tickets and 2 adult tickets for $88. How much does each type of ticket cost?

3. A movie theatre sells child tickets for \$7.50, adult tickets for \$9.75, and student tickets for \$8. The movie theatre sold twice as many child tickets as student tickets. If a total of 191 tickets for the film were sold and the total income was \$1593.50, how many of each ticket were sold?

4. Brendan has 12 bills in his wallet that total \$110. He has a mix of five-dollar bills, ten-dollar bills, and twenty-dollar bills. The number of five-dollar bills is triple the amount of twenty-dollar bills. How many of each denomination does Brendan have in his wallet?

5. Sarah received an inheritance of $30,000. She wants to put some of the money into a savings account that earns 1.5% interest annually and invest the rest in certificates of deposit (CDs) and bonds. A broker tells her that CDs pay 4% interest annually and bonds pay 5% interest annually. She wants to earn $800 interest per year and wants to invest twice as much money in CDs as in bonds. How much should she put in each type of investment?

6. Zoe is helping her grandmother with her flower garden. She decides to add some clematis vines, rose bushes, and peony plants to her garden. The price of a clematis vine is $3 more than twice a peony plant. The price of a rose bush is $5 more than a clematis vine. She decides to buy 3 clematis plants, 4 rose bushes, and 2 peony plants for a total of $233. How much does each plant cost?

II. Optimization

A. Write a system of inequalities to represent the constraints in each problem situation. Be sure to define your variables.

1. A company manufactures two kinds of lawn mowers, gas-powered and electric. It can manufacture at most 100 mowers per day but must manufacture at least 25 gas-powered mowers each day to maintain its inventory.

2. Miller's Bike Shop sells adult-sized and child-sized bikes. The shop owner believes he will sell at least 20, but no more than 40 bikes per month. He also believes he will sell at least twice as many adult-sized bikes as he will child sized bikes.

3. A farmer wants to plant corn and oats on her 200-acre farm. She wants to plant at least 50 acres but no more than 100 acres of corn and no more than 125 acres of oats.

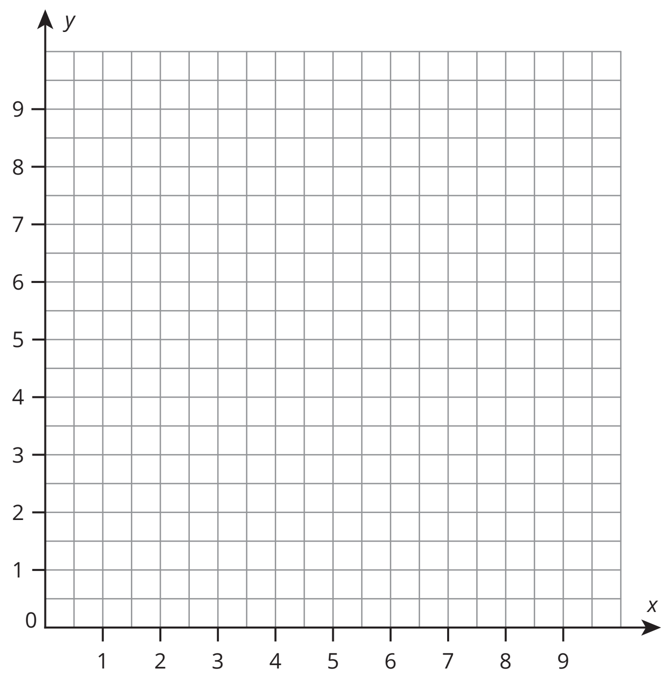
4. Northern University's athletic department has 1200 travel packages to their holiday bowl game. Individuals who buy one of the packages can choose to travel by coach bus or by school bus. Each coach bus can carry 60 passengers and each school bus can carry 48 passengers. The university is only able to locate a total of 20 vehicles.

5. A local runner's club rented an auditorium seating 600 people to hear a presentation by a world-record runner. Tickets to the event cost $5 for anyone who is 18 years old or younger and $7 for everyone else. The club already knows that at least fifty $5 tickets and two hundred $7 tickets have been sold.

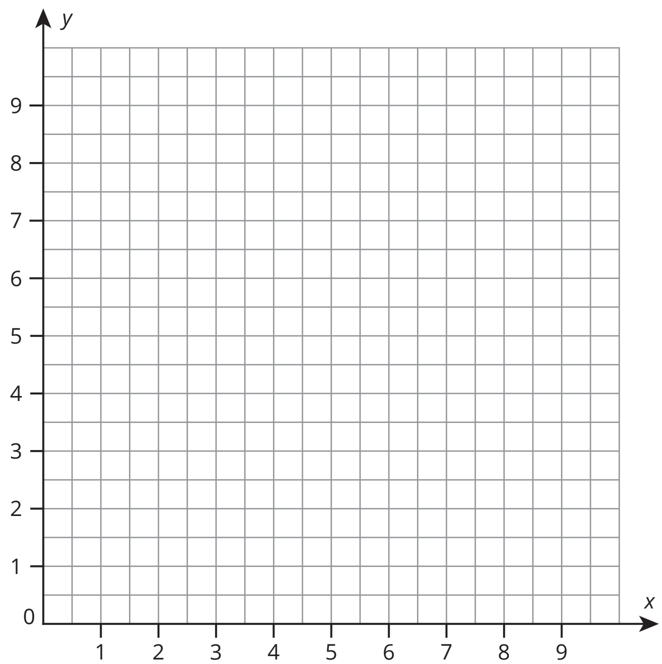
6. A local craft shop sells necklaces and bracelets. The shop owner predicts she will sell more than 30 but less than 60 pieces of jewelry each month. She also believes the number of necklaces she will sell will be more than 3 times as many bracelets she will sell.

B. Graph each system of inequalities represented by the given constraints. Shade the region that represents the solution set.

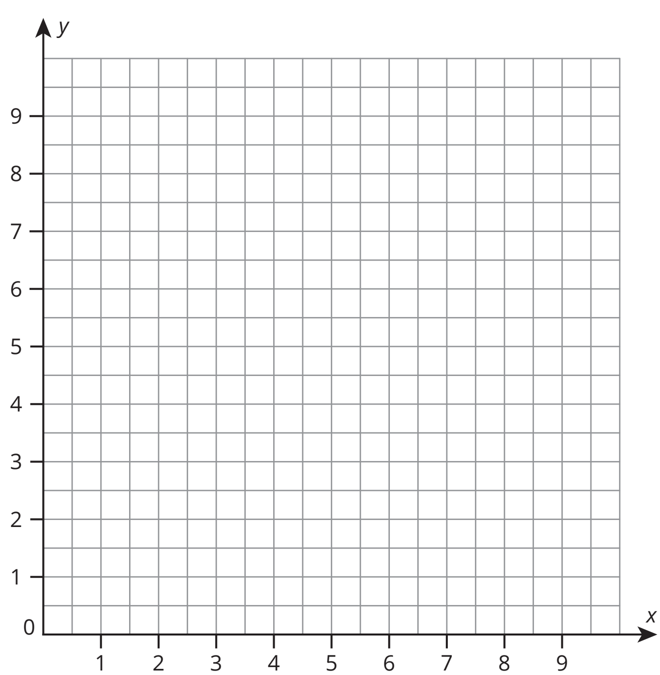
1. $\begin{cases} x > 2 \\ x \leq 6 \\ y \geq 0 \\ y < 3 \end{cases}$



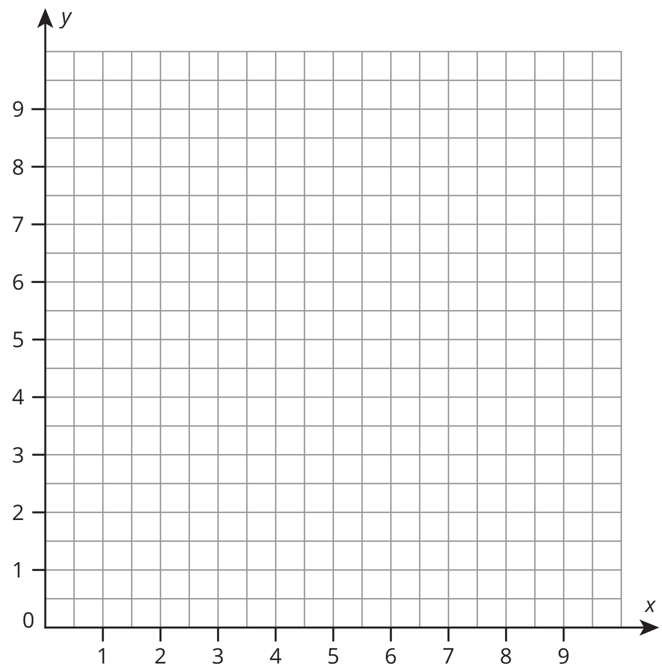
2. $\begin{cases} x \geq 1 \\ x < 5 \\ y \geq 0 \\ y \leq -\frac{1}{4}x + 5 \end{cases}$



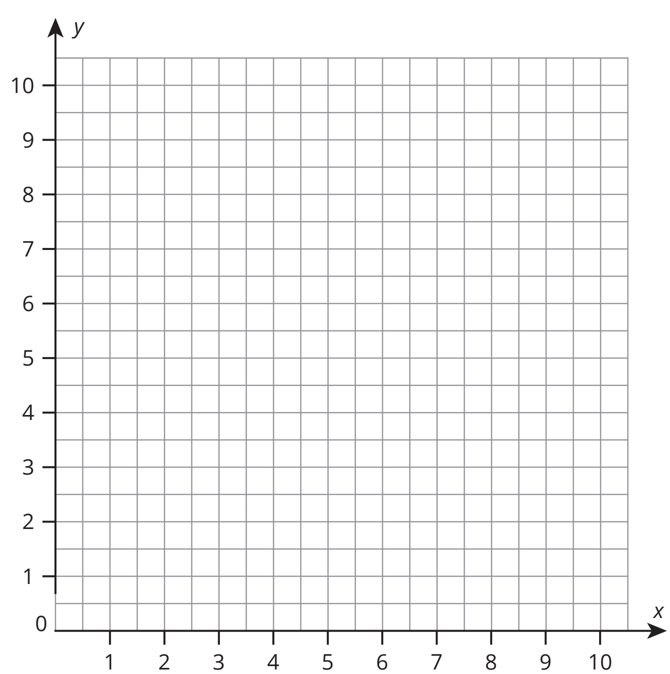
3. $\begin{cases} x \geq 0 \\ y \geq 0 \\ y < -4x + 16 \\ y < -\frac{1}{3}x + 5 \end{cases}$



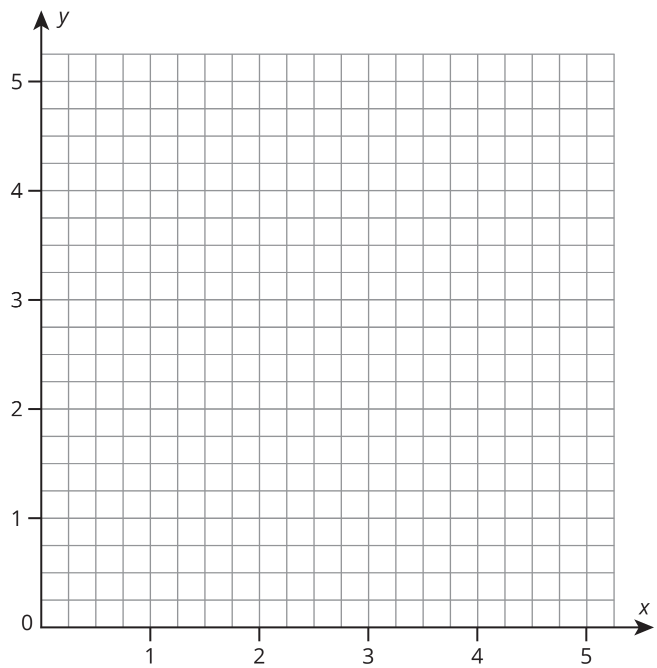
4. $\begin{cases} x \geq 0 \\ y \geq 0 \\ x + 2y \leq 14 \\ 3x + y \leq 12 \end{cases}$



5. $\begin{cases} x \geq 0 \\ -x + y > 0 \\ 2x + y > 6 \\ 2x + y \leq 10 \end{cases}$



6. $\begin{cases} x \geq 0 \\ y \geq 0 \\ x + 3y > 3 \\ x + y \geq 2 \end{cases}$



C. In each problem situation, the coordinates represent the intersection points of a set of inequalities representing the constraints in the problem situation. Using these coordinates, calculate the minimum and maximum value of the function $C(x, y)$.

1. $C(x, y) = x + 3y$

$\{(0, 5), (2, 0), (7, 0)\}$

2. $C(x, y) = 3x - 2y$

$\{(6, 7), (10, 3), (12, 10), (20, 6)\}$

3. $C(x, y) = x - 4y$
$\{(8, 2), (10, 1), (13, 3)\}$

4. $C(x, y) = 2x + 2y$
$\{(0, 0), (1, 4), (5, 7), (9, 6), (11, 0)\}$

5. $C(x, y) = x - 3y$
$\{(-2, -1), (-1, 0), (0, 4), (3, 1), (5, -2)\}$

6. $C(x, y) = 2x + 2y$
$\{(0, 0), (3, 4), (5, 5), (7, 2), (8, -2)\}$

D. Use substitution to solve each system of three linear equations in three variables.

1. $\begin{cases} x - 3z = -5 \\ 7x - 3y - 5z = 19 \\ 2x - y + 2z = 16 \end{cases}$

$-3y + 16z = 54$
$-y + 8z = 26$

$x = 3z - 5$

$-3y + 16z = 54$

$-3(-y + 8z = 26)$

$-3y + 16z = 54$

$3y - 24z = -78$

$-8z = -24$

$z = 3$

$x = 3z - 5$

$x = 3(3) - 5$

$x = 4$

$2y + 8z = 26$

$2y + 8(3) = 26$

$2y + 24 = 26$

$2y = 2$

$y = -2$

2. $$\begin{cases} x + 2y - z = 4 \\ x + 2y + z = 2 \\ 2x + y + z = -2 \end{cases}$$

3. $\begin{cases} 5x + y - 2z = 5 \\ 3x + 4y - z = -7 \\ x - 5y + 2z = 19 \end{cases}$

4. $\begin{cases} x + y + z = 500 \\ 2x + 47y + 5z = 2200 \\ y - z = -50 \end{cases}$

5. $\begin{cases} 25a + 5b + c = 2 \\ 49a + 7b + c = 6 \\ 9a + 3a + c = 0 \end{cases}$

6. $$\begin{cases} x + 2y + 4z = 4 \\ 2x + y + 2z = 7 \\ x + 2y + z = 5 \end{cases}$$

III. Solving Matrix Equations

A. Determine the dimensions of each matrix.

1. $A = \begin{bmatrix} -5 \\ 13 \\ 44 \end{bmatrix}$

2. $D = \begin{bmatrix} 7 & 7 & 7 \end{bmatrix}$

3. $X = \begin{bmatrix} 23 & 47 \\ -20 & 0 \end{bmatrix}$

4. $C = \begin{bmatrix} 6 & -3 & 14 & 22 & -4 \\ 8 & 7 & -5 & 4 & 1 \end{bmatrix}$

5. $B = \begin{bmatrix} 0 & 1 \\ -1 & 1 \\ 1 & 0 \\ 1 & -1 \end{bmatrix}$

6. $B = \begin{bmatrix} \frac{3}{4} & 3 & 6 & -2 & 4 & -1 \\ 0 & 2 & -8 & 9 & 5 & 3 \\ -9 & \frac{1}{2} & -6 & -\frac{4}{5} & 22 & 20 \\ -4 & -5 & -\frac{5}{7} & 2 & 44 & 56 \\ -35 & -3 & 0 & 5 & 4 & -10 \end{bmatrix}$

B. Use matrix *A* to answer each question.

$$A = \begin{bmatrix} 2.1 & 0 & -3.4 & 11.2 & -4.0 & 5.5 \\ -7.3 & 0.8 & 1.9 & -6.7 & -15.2 & 6.9 \\ 4.6 & 9.8 & -3.2 & 3.3 & 0.3 & -0.9 \\ 1.1 & 0.5 & 5.9 & 4.3 & 7.1 & -13.2 \end{bmatrix}$$

1. Determine matrix element a_{35}.

2. Determine the matrix element represented by the value -13.2.

3. Determine matrix element a_{44}.

4. Determine matrix element a_{54}.

5. Determine the matrix element represented by the value 5.5.

6. Determine the matrix element represented by the value 0.5.

C. Use the matrices to answer each question.

$$A = \begin{bmatrix} 1 & -3 \\ 4 & 7 \end{bmatrix} \quad B = \begin{bmatrix} -11 & -3 \\ -6 & 1 \end{bmatrix} \quad C = \begin{bmatrix} 5 & 8 & 0 & -3 \\ 2 & -1 & 1 & -3 \end{bmatrix}$$

$$D = \begin{bmatrix} 6 & 9 & 3 & 1 \\ 4 & 8 & 1 & 2 \end{bmatrix} \quad E = \begin{bmatrix} 2 & 0 \\ 0 & -3 \end{bmatrix} \quad F = \begin{bmatrix} -7 & 3 & -4 \\ 3 & 10 & -1 \\ 14 & -3 & 0 \end{bmatrix}$$

1. Calculate $2A$.

2. Calculate $C - D$.

3. Calculate $D + F$.

4. Calculate $4E + A$.

5. Calculate $-2C + D$.

6. Calculate $B - 2A$.

7. Calculate $4F$.

$$4F = \begin{matrix} 4(-7) & 4(3) & (4(-4) \\ 4(3) & 4(10) & 4(-1) \\ 4(14) & 4(-3) & 4(0) \end{matrix}$$

8. Calculate $E - B$.

D. Use the matrices to answer each question.

$$A = \begin{bmatrix} -7 & 2 & 4 \end{bmatrix} \qquad B = \begin{bmatrix} -1 \\ 3 \\ 4 \end{bmatrix} \qquad C = \begin{bmatrix} 2 & -9 & 5 \\ 3 & -1 & 0 \\ 10 & -2 & 7 \end{bmatrix}$$

$$D = \begin{bmatrix} -4 & 11 \\ 3 & -2 \\ 8 & -10 \end{bmatrix} \qquad E = \begin{bmatrix} -3 & 5 & 0 & -6 & 6 \\ -8 & 7 & 3 & 0 & -1 \end{bmatrix} \qquad F = \begin{bmatrix} -12 & -4 \\ 4 & 12 \end{bmatrix}$$

1. Calculate *AB*.

2. Calculate *CB*.

3. Calculate *BC*.

4. Calculate *DE*.

5. Calculate *AD*.

6. Calculate (*BA*)*C*.

E. Use matrix multiplication to determine whether the two matrices are inverses. Explain your reasoning.

1. $R = \begin{bmatrix} -1 & 3 \\ -2 & 4 \end{bmatrix}$ $S = \begin{bmatrix} 2 & -\frac{3}{2} \\ 1 & -\frac{1}{2} \end{bmatrix}$

2. $A = \begin{bmatrix} -9 & 5 \\ -7 & 4 \end{bmatrix}$ $B = \begin{bmatrix} -4 & 5 \\ -7 & 9 \end{bmatrix}$

3. $D = \begin{bmatrix} 6 & -3 \\ -8 & 4 \end{bmatrix}$ $E = \begin{bmatrix} -6 & 8 \\ 3 & -4 \end{bmatrix}$

4. $M = \begin{bmatrix} -1 & 12 \\ \frac{3}{2} & -15 \end{bmatrix}$ $N = \begin{bmatrix} 5 & 4 \\ \frac{1}{2} & \frac{1}{3} \end{bmatrix}$

5. $J = \begin{bmatrix} -5 & 3 & -2 \\ 1 & -1 & 1 \\ 6 & -3 & 2 \end{bmatrix}$ $N = \begin{bmatrix} 1 & 0 & 1 \\ 4 & 2 & 3 \\ 3 & 3 & 2 \end{bmatrix}$

6. $A = \begin{bmatrix} 1 & 0 & 1 \\ 4 & 2 & 3 \\ 3 & 3 & 2 \end{bmatrix}$ $B = \begin{bmatrix} 2 & -1 & 1 \\ -4 & 2 & 3 \\ \frac{1}{2} & 0 & -\frac{1}{2} \end{bmatrix}$

F. Use technology to calculate the inverse of each matrix, if it exists. Use matrix multiplication to verify your answer.

1. $K = \begin{bmatrix} 1 & -3 \\ 2 & 2 \end{bmatrix}$

2. $C = \begin{bmatrix} 4 & 8 \\ -2 & 6 \end{bmatrix}$

3. $S = \begin{bmatrix} -2 & 2 \\ 4 & -4 \end{bmatrix}$

4. $B = \begin{bmatrix} 4 & -2 & 1 \\ 2 & -3 & 0 \\ 3 & 0 & 1 \end{bmatrix}$

5. $L = \begin{bmatrix} 1 & 1 & -2 \\ 1 & 2 & -2 \\ 2 & -3 & -4 \end{bmatrix}$

6. $J = \begin{bmatrix} -25 & 7 & 26 \\ 3 & -1 & -3 \\ 26 & -7 & -27 \end{bmatrix}$

G. Write each system of equations as a matrix equation. Then calculate the solution to each system of linear equations, if it exists, by using technology with matrices.

1. $\begin{cases} x + y = 6 \\ -3x + y = 2 \end{cases}$

2. $\begin{cases} -x + 2y = 10 \\ -3x + 6y = 20 \end{cases}$

3. $\begin{cases} x + y + 3z = 12 \\ x - y - z = 0 \\ 2x + y - 2z = 3 \end{cases}$

4. $\begin{cases} 3x - 5y + 2z = -8 \\ 7x + 5y - 3z = 16 \\ 5x + 3y - 7z = 0 \end{cases}$

5. $\begin{cases} 2x + 6y + 12z = -6 \\ x + 3y + 6z = -3 \\ 3x - 2y + 3z = 8 \end{cases}$

6. $\begin{cases} x + 4y - 2z = 8 \\ 5x + 7y - 5z = 6 \\ -3x + 2y - 6z = 6 \end{cases}$

IV. Defining Absolute Value Functions and Transformations

A. For each transformation, describe the effect on the graph of the basic absolute value function, $f(x) = |x|$.

TEKS 2A.6C

1. $a(x) = |-3x|$

2. $h(x) = -\left|\frac{1}{2}x\right|$

3. $k(x) = 2|x| - 3$

4. $b(x) = -|x + 2|$

5. $m(x) = \frac{1}{2}|x - 5|$

6. $p(x) = -3|x| - \frac{1}{3}$

B. Graph each transformation of the basic absolute value function, $f(x) = |x|$. Then, identify its vertex, state its domain and range, and write the absolute value function.

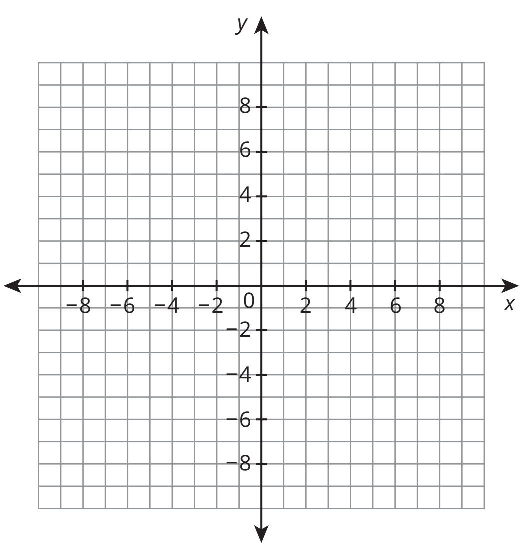
1. $k(x) = -f(2x)$

Vertex: **(0, 0)**

Domain: **All real numbers**

Range: $y \leq 0$

$k(x) = -\left|\frac{1}{2}x\right|$



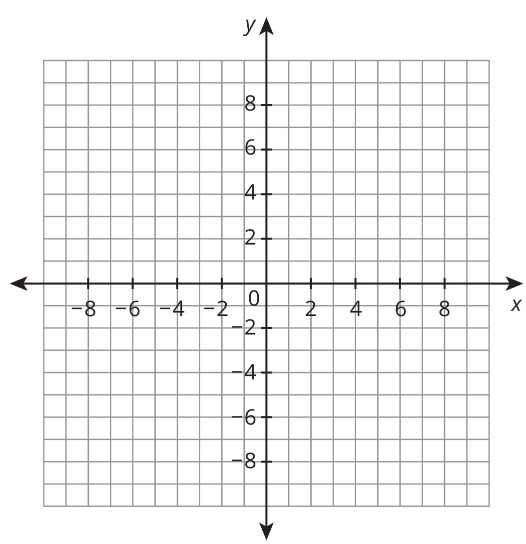
2. $m(x) = f(x) + 5$

Vertex: **(0, 5)**

Domain: **All real numbers**

Range: $y \geq 5$

$m(x) = |x| + 5$



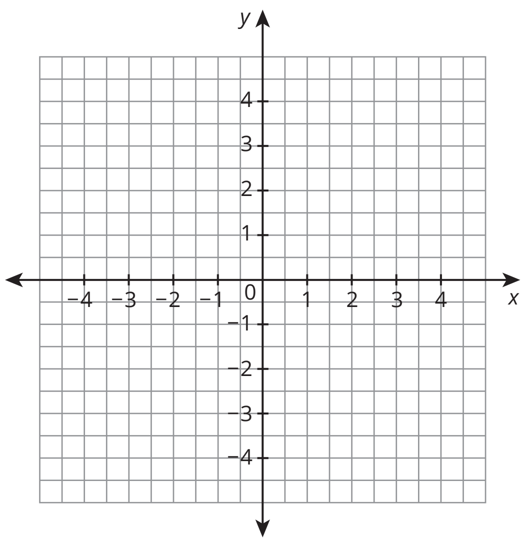
3. $r(x) = f(-2(x + 2))$

Vertex: $\left(\frac{1}{2}, 0\right)$

Domain: **All real numbers**

Range: $y \geq 0$

$r(x) = |-2(x + 2)|$



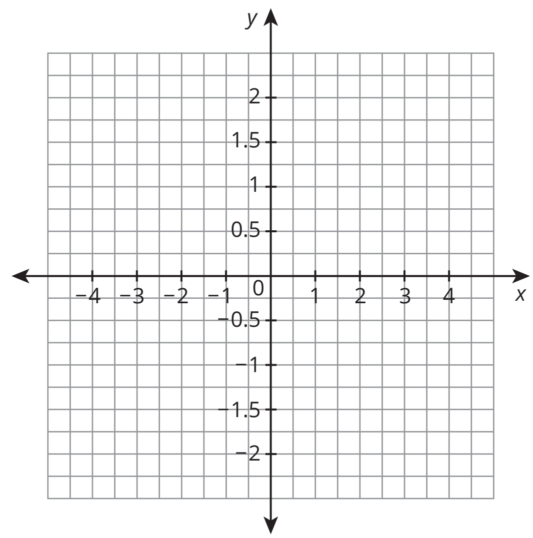
4. $j(x) = \frac{1}{4}f(x) + \frac{1}{2}$

Vertex: $\left(0, \frac{1}{2}\right)$

Domain: **All real numbers**

Range: $y \geq \frac{1}{2}$

$j(x) = \frac{1}{2}|x| + \frac{1}{2}$



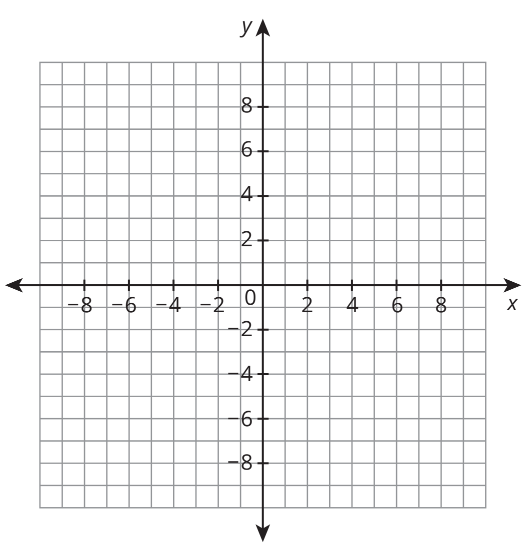
5. $a(x) = -f(x + 1) + 2$

Vertex: **(−1, 2)**

Domain: **All real numbers**

Range: $y \leq 2$

$a(x) = -|x + 1| + 2$



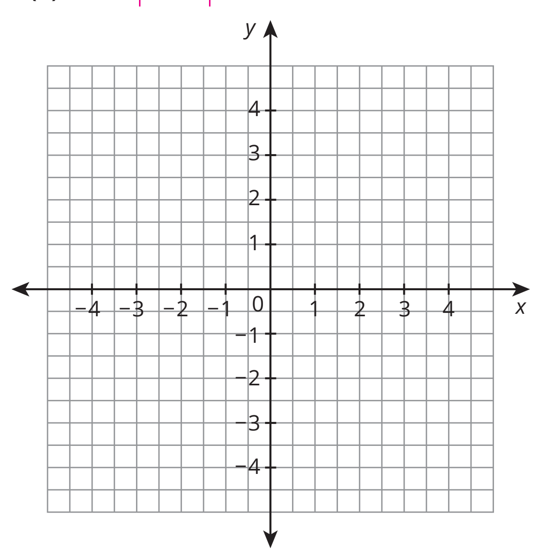
6. $b(x) = -3f(x + 2) - 1$

Vertex: **(−2, −1)**

Domain: **All real numbers**

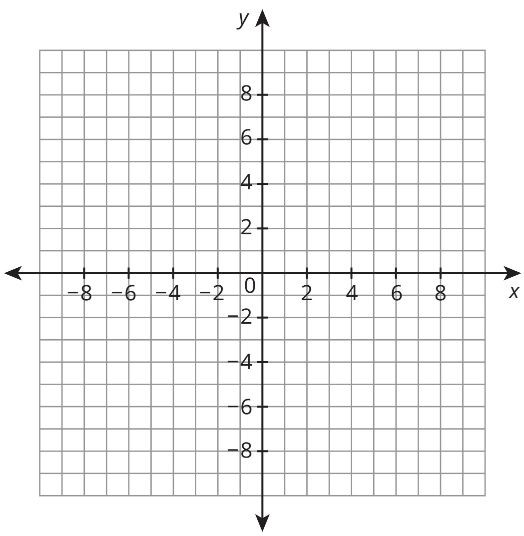
Range: $y \leq -1$

$b(x) = -3|x + 2| - 1$

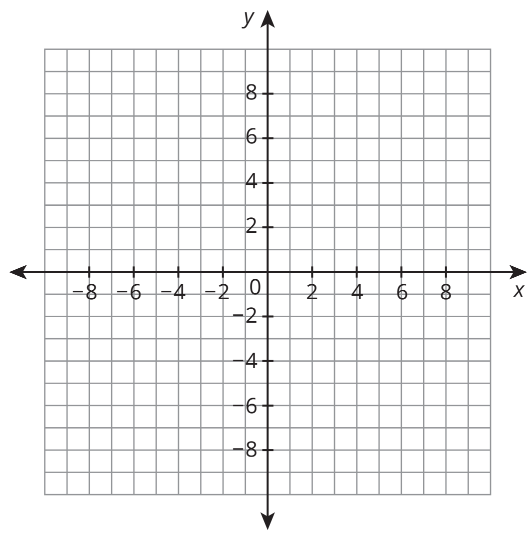


C. Write a transformed absolute value function in terms of the basic absolute value function $f(x) = |x|$ for the given characteristics. Then, graph the transformed function.

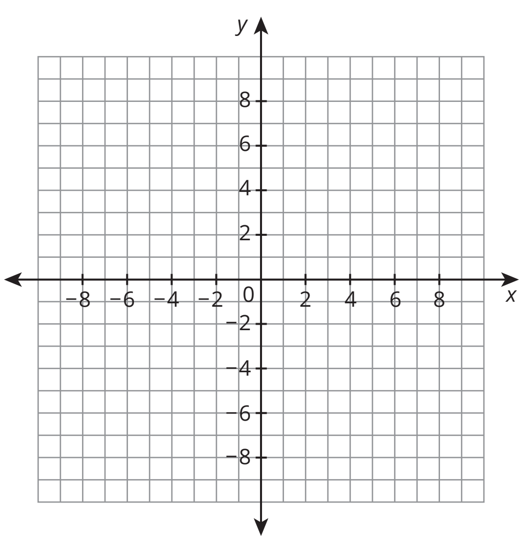
1. Reflected across the line $y = 0$ and translated up 4 units



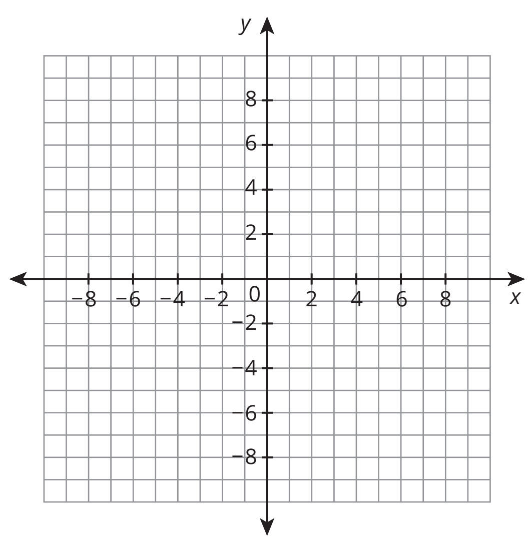
2. Reflected across the line $y = 0$ and horizontally stretched by a factor of $\frac{3}{2}$



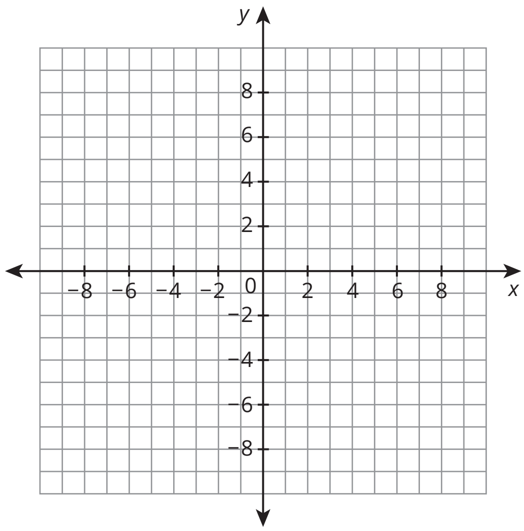
3. Vertex (0, −2) and range $y \leq -2$



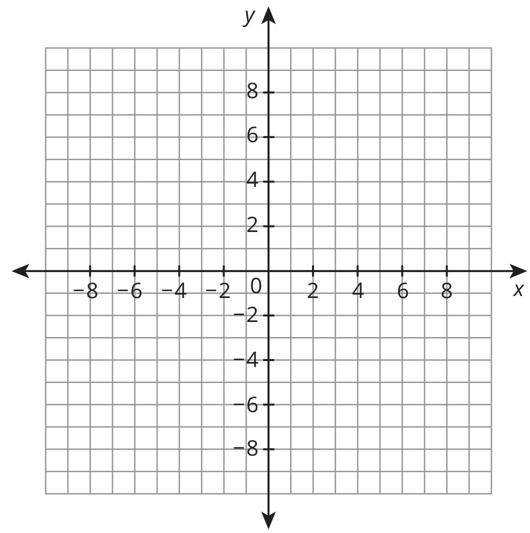
4. Vertex (4, 0) and horizontally stretched by a factor of 2



5. Vertically compressed by a factor of $\frac{1}{3}$ and translated down 1 unit



6. Axis of symmetry $x = 5$ and range $y \geq -3$



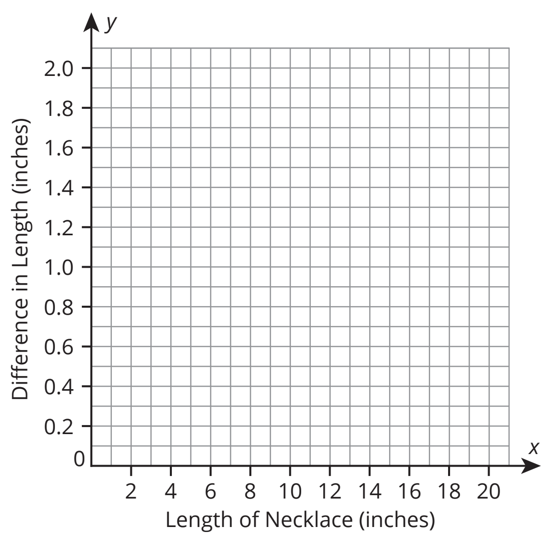
D. Consider the function, $f(x) = |x|$. Complete the table.

Transformation	Transformation Function Form	Equation	Coordinate Notation
1. Vertical stretch by a factor of 3, and horizontal translation of 1 unit right			
2. A vertical translation down four units			$(x, y - 4)$
3. A horizontal translation of 2 units to the left and a vertical translation of one unit up		$y = \|x + 2\| + 1$	
4. Reflection across the y-axis	$f(x) = f(-x)$		
5. A horizontal compression of $\frac{1}{2}$ and reflection over the x-axis			$\left(\frac{1}{2}x, -y\right)$
6. A horizontal translation of 3 units left, a vertical translation of 4 units down, and a vertical dilation of $\frac{1}{3}$			$\left(x - 3, \frac{1}{3}y - 4\right)$

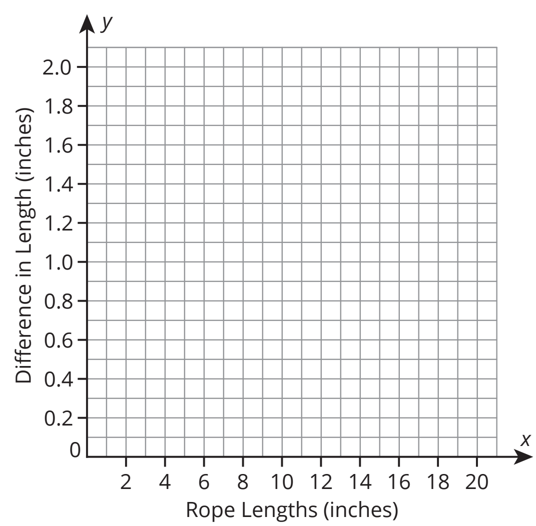
V. Absolute Value Equations and Inequalities

A. Write and graph the function that represents each problem situation. Verify your answer algebraically.

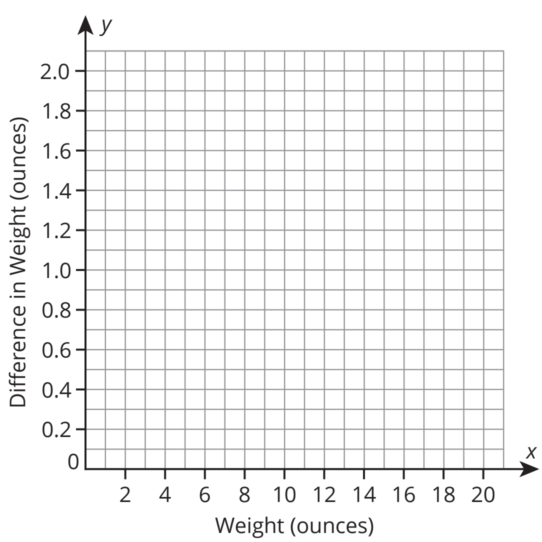
1. A jewelry company is making 16-inch bead necklaces. The specifications allow for a difference of 0.5 inch. Write a function to represent the difference between the necklaces manufactured and the specifications. Graph the function. Use your graph to determine the necklace lengths that meet the specifications and verify your answer algebraically.



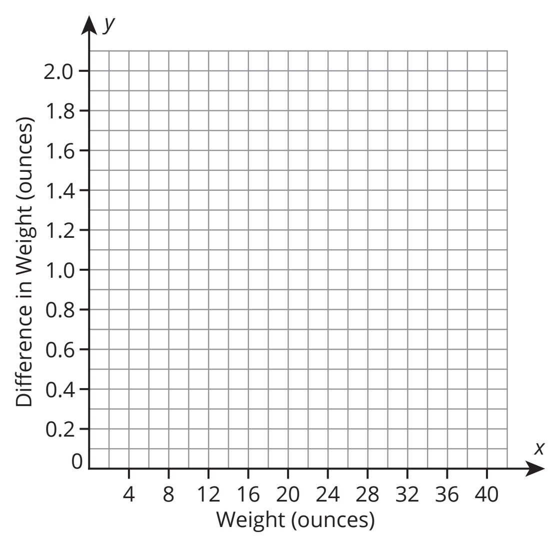
2. Julian is cutting lengths of rope for a class project. Each rope length should be 10 inches long. The specifications allow for a difference of 1 inch. Write a function to represent the difference between the rope lengths cut and the specifications. Graph the function. Use your graph to determine the rope lengths that meet the specifications and verify your answer algebraically.



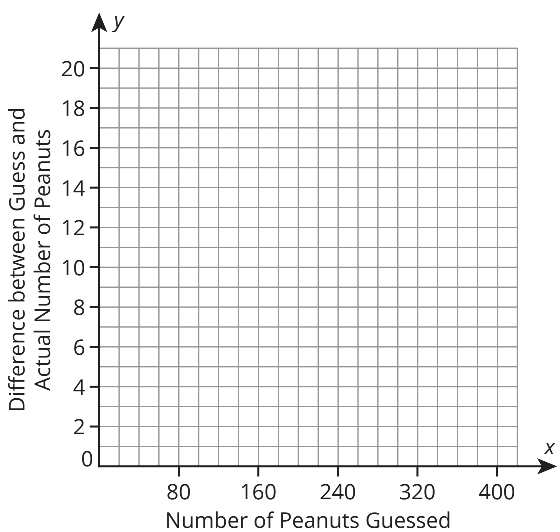
3. A snack company is filling bags with pita chips sold by weight. Each bag should contain 8 ounces of chips. The specifications allow for a difference of 0.25 ounce. Write a function to represent the difference between the weight of a bag of chips and the specifications. Graph the function. Use your graph to determine the weights that meet the specifications and verify your answer algebraically.



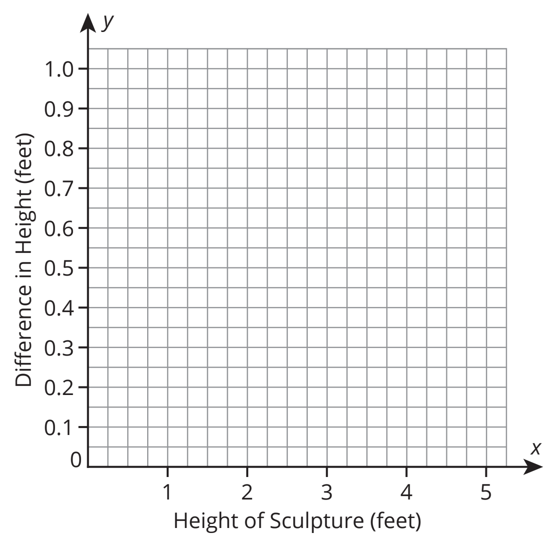
4. A cereal company is filling boxes with cereal sold by weight. Each box should contain 32 ounces of cereal. The specifications allow for a difference of 0.5 ounce. Write a function to represent the difference between the weight of a box of cereal and the specifications. Graph the function. Use your graph to determine the weights that do **NOT** meet the specifications and verify your answer algebraically.



5. Guests at the school harvest festival are asked to guess how many peanuts are in a jar. The jar contains 260 peanuts. All guests within 10 peanuts of the correct answer win a prize. Write a function to represent the difference between a guess and the actual number of peanuts in the jar. Graph the function. Use your graph to determine the possible guesses that will **NOT** win a prize and verify your answer algebraically.



6. The rules of an art contest state that sculptures submitted should be 3 feet high but allow for a difference of 6 inches. Write a function to represent the difference between a sculpture that is submitted and the specifications. Graph the function. Use your graph to determine the heights that do **NOT** meet the specifications and verify your answer algebraically.



B. Match each compound inequality to its equivalent absolute value inequality.

1. **a.** $-15 < -3x + 7 < 15$ $\qquad |-3x + 7| \leq 15$

b. $-3x + 7 \leq -15$ or $-3x + 7 \geq 15$ $\qquad |-3x + 7| > 15$

c. $-15 \leq -3x + 7 \leq 15$ $\qquad |-3x + 7| < 15$

d. $-3x + 7 < -15$ or $-3x + 7 > 15$ $\qquad |-3x + 7| \geq 15$

2. **a.** $-2 \leq 6x - 5 \leq 2$ $\qquad |6x - 5| > 2$

b. $6x - 5 < -2$ or $6x - 5 > 2$ $\qquad |6x - 5| \geq 2$

c. $6x - 5 \leq -2$ or $6x - 5 \geq 2$ $\qquad |6x - 5| < 2$

d. $-2 < 6x - 5 < 2$ $\qquad |6x - 5| \leq 2$

3. **a.** $-11 < -x - 10 < 11$ $\qquad |2x - 10| > 11$

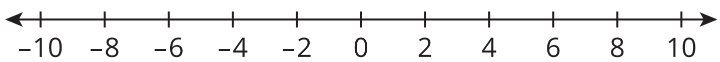
b. $-x - 10 \leq -11$ or $2x - 10 \geq 11$ $\qquad |2x - 10| \leq 11$

c. $-11 \leq -x - 10 \leq 11$ $\qquad |2x - 10| < 11$

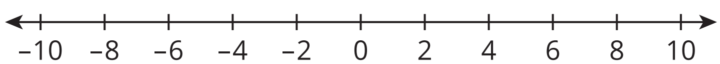
d. $-x - 10 < -11$ or $-x - 10 > 11$ $\qquad |2x - 10| \geq 11$

C. Solve the linear absolute value inequality by rewriting it as an equivalent compound inequality. Then graph your solution on the number line.

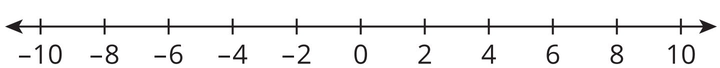
1. $|x - 3| \geq 4$



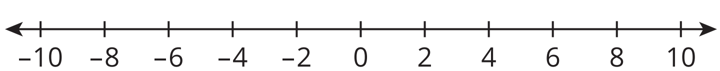
2. $5 > |2x + 7|$



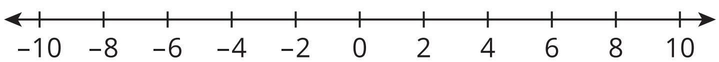
3. $|3x - 1| > 11$



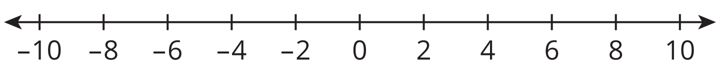
4. $|2x - 8| - 1 \leq 3$



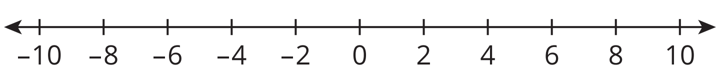
5. $|3x - 2| < -4$



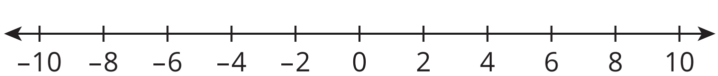
6. $|-4x + 1| \geq 9$



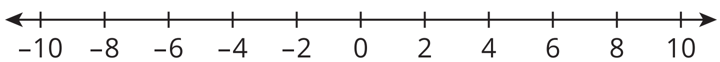
7. $|-2x - 5| < 3$



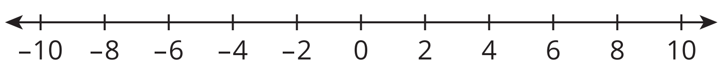
8. $-12 < |x - 7|$



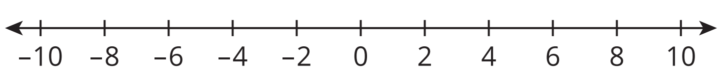
9. $2 + |5x - 4| \leq 18$



10. $10 > |x - 3| + 5$



11. $|-x + 4| \geq 5$



12. $|-4x + 8| + 10 \leq 6$